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Worldwide Report

TELECOMMUNICATIONS POLICY,
RESEARCH AND DEVELOPMENT

No. 135

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WORLDWIDE AFFAIRS

BRIEFS

DPRK, MOZAMBIQUE BROADCAST ACCORD--Pyongyang, October 3 (KCNA)--An agreement on cooperation in broadcasting between the DPRK radio and television broadcasting committee and the broadcasting station of the People's Republic of Mozambique was signed on September 26 in Maputo, according to a report. The agreement was signed on our side by the DPRK ambassador to Mozambique and on the Mozambican side by the acting director of the Mozambican broadcasting station. [Text] [SK030447 Pyongyang KCNA in English 0358 GMT 3 Oct 80]

PRC-FRANCE RADIO AGREEMENT--A 2-year agreement was signed yesterday between Radio France and the Chinese radio. It is a matter of cultural, journalistic and musical cooperation. This linkup between Radio France and Radio Beijing over the radio waves was welcomed by the Chinese representatives. [Begin recording of unidentif'ed voice in Chinese, with superimposed French translation] At present, the international situation is more agitated and more tense. We are all conscious of the fact that in the fight against hegemonism and for the safety of world peace and for the building of our respective countries it is necessary to reinforce our cooperation. The agreement just signed reflects, in fact, this firm will and marks the entry into a new stage of our cooperation in the field of broadcasting. The fact that this agreement should be signed just before the visit of President Giscard d'Estaing to China is quite special in significance. I express my great pleasure and congratulations in this respect. Finally, I express the wish that our cooperation should develop without interruption. [end recording] [Text] [LD041440 Paris Domestic Service in French 1200 GMT 4 Oct 80]

AFGHAN, CUBA SIGN AGREEMENT--An agreement to exchange information regarding politics, economics and social and cultural events between the Bakhtar News Agency [BNA] and the PRENSA LATINA agency of Cuba was signed in Kabul today. The agreement was signed for Afghanistan by Dr Haider Mas'ud, deputy for publications in the Democratic Republic of Afghanistan Ministry of Culture and Information, and for Cuba by Raul Garcia Pelaez, the Cuban ambassador in Kabul, and the relevant documents exchanged. During the signing of the agreement the director of BNA and some directors and staff members of the Ministry of Culture and Information were also present. As a result of this agreement PRENSA LATINA, which is known as PL, from time to time will prepare for BNA reports on main current events together with documents, and BNA in turn will provide authentic documents, bulletins and photos for PRENSA LATINA. [Text] [LD071757 Kabul Domestic Service in Pashto 1530 GMT 07 Oct 80]

T&T OFFICIALS URGED TO IMPROVE TELECOM SERVICES

Dacca THE BANGLADESH TIMES in English 19 Aug 80 pp 1, 8

[Text] Minister for Posts, Telegraphs and Telephones Mr Mayeedul Islam stressed on maintaining the telegraph and telephone system properly.

The Minister was addressing the conference of General Managers, Divisional Engineers, Subdivisional Officers and other officials of the Telegraph and Telephone Board on Monday at Dacca.

Mr Islam told the officers to improve the services of telecommunication system in the country. He regretted that the standard of service had deteriorated and asked the officers to take immediate steps for its betterment. He told them to speedily replace the worn out outdate tele-printer machines phase wise. [as published]

The Minister said that due to wrong planning in the past telephone and telegraph installations were not being utilised fully. He said that measures had been taken to readjust and utilise the capacity as far as possible.

Referring to the telephone bills the Minister said that up-to-date and accurate bills should be prepared so that confidence was created among the subscribers. [as published] He appreciated the improved services of overseas telegraph and telephone services through satellite. He also appreciated the role of the T&T for providing life-photo to the television through satellite. This had improved the standard of the news service of the television.

Mr Mayeedul Islam also advised the officials to be polite in dealing with the members of public.

CSO: 5500

INFORMATION MINISTRY PLANS TV NETWORK EXPANSION

Bombay THE TIMES OF INDIA in English 16 Aug 80 p 1

[Text] New Delhi, August 15.

Doordarshan proposes to work out a low cost solution to the growing demand for TV centres from many parts of the country.

It favours renting out P and T microwave links exclusively for its use on trunk routes where relay transmitters could be set up. These transmitters could relay programmes from the TV centres on the same language zone.

Thus a relay transmitter in Indore or Nasik on the Delhi-Bombay route can relay to viewers within its range programmes from the stations in the two metropolitan cities.

The capital cost of a relay transmitter is estimated at Rs. 1.75 crores. The recurring expenditures every year would be around Rs. 10 lakhs in addition to the rent to be paid to the P and T.

Doordarshan has reportedly identified 49 such potential centres for relay transmitters. At least eight would be included in the sixth plan.

It was ten years ago that the P and T launched microwave link programme that would cover the entire country. Primarily for communication purposes, these could be engineered for transmission of TV programmes with some incremental cost.

The P and T has been asked to provide microwave links on the routes between Delhi and Bombay, Calcutta and Srinagar, and Bombay and Madras. The Madras-Bombay circuit is complete. This will facilitate setting up relay transmitters at Mysore and Mangalore.

The circuits connecting Delhi with Bombay and Calcutta are expected to be ready in three to four months. An immediate advantage would be the facility to relay live by one station the programmes presented by the

other. A national TV hook-up could be established when all the microwave routes are complete.

An immediate beneficial fall-out from the aerial links, where these are already complete, will be the capability for relay transmitters.

Apart from the relay scheme, the information ministry will discuss with the concerned agencies, TV expansion plans through INSAT, establishment of TV centres at the capitals of states and Union territories and a project to provide service to about ten centres which do not fall under any of these categories.

TV centres have already been approved for Kasauli, Jammu, Ajmer, Ahmedabad, Panaji, Trivandrum, Madurai, Vijayawada, Cuttack, Asanol and Varanasi.

Even so, the expansion programme falls far short of the demand. For, completion of the approved projects, television service will be available only in 13 states and two Union territories. [as published]

CSO: 5500

HIGHER OUTLAY NEEDED FOR RURAL TV DEVELOPMENT

Bombay THE TIMES OF INDIA in English 29 Jul 80 p 6

(Article by P. C. Chatterji, former director-general, All India Radio)

[Text] So now we are told that colour TV is necessary for rural development. Without colour, the TV instructional programmes for the rural people cannot be convincing because they are not vivid. And then it is being argued that investment in colour will not be much higher than that required for black and white.

Only five years ago when SITE was being inaugurated, the TV screen was regarded as the magic wand which would bring about social change. Somehow SITE seems to have been forgotten in less than half a decade. Prior to that, in the late 'fifties when radio rural forums came into existence, we were asked to pin our hopes on radio as the agency which would usher in a new world. That euphoria too blew over.

Before we examine what can legitimately be expected of TV in the field of development, we should scrutinize the need and the cost of going in for colour. In a sense the problem is at our doorstep already. International technology sets the pace and closes the options. I understand that 16 mm raw stock, which is wholly imported, is not going to be available in monochrome in a few months. Only colour film will now be produced. Of course we can use the colour raw stock and continue to see the films only in black and white. This means loss on two accounts. The colour raw stock is considerably more expensive and showing it in black and white would mean that we will not get any benefit from the additional cost. However, this is a problem which we would share with many affluent countries, where despite transmission in colour, black and white receivers continue to be used because people cannot afford the additional cost of the colour set. In our case the additional cost will have to be borne by Doordarshan and a few documentary producers working in 16 mm.

Merit

If not today, then certainly within the next five to six years spare parts for black and white transmissions, studio hardware, and possibly

adequate resources, will also not be available. So, the argument is, why not go in for colour today when in the next few years we will be forced to do so anyway? Further investment in black and white TV will be infructuous in the not so long run. (as published)

There is, indeed, a good deal of merit in this argument. The issue that the country really needs to face is the cost of TV in any shade. There is no point in continuing to bluff ourselves and leaving Doordarshan with resources which led the Verghese working group to remark: "What equally impressed members was the fact brought home time and again of how much had so often been accomplished with so little. It was well said that some of the television transmissions put on the air by Doordarshan constitute nothing less than a daily miracle." Page 11, para 1.7 of the report.

It is a common tendency to underestimate costs at the planning stage. For example, it is being argued that in the sixth plan Doordarshan was providing Rs 1.75 crore for each transmitter. The additional expense of equipment necessary for colour transmission such as a colour monitor, colour sync generator etc. would only add a few lakhs to this figure. May be the total might come to Rs 2 crores. For studios, Doordarshan had provided Rs 5 crores per centre for black and white. With colour an additional crore would be required.

Studio Complex

While the figure for the transmitter might be correct, it must be noted that an investment of Rs 6 crores will give us only a one studio complex. Colour cameras, colour videotape recorders and colour monitors are the main items which will consume the additional crore of rupees. But colour requires larger studios and far more sophisticated lighting and graphics and one wonders if these factors have been taken into account.

However, the basic fact to remember is that only one studio will be provided--to start with, we are told. There will be a second phase, when the studio and other shortages will be made good. We have heard that story before. Bombay started with one studio in 1972 and it took six or seven years before another could be added--and that too is unsatisfactory. Calcutta and Lucknow have been operating with one makeshift studio since 1975 and there are no signs of any additions in the immediate future. What can one expect from a single studio set-up--two-and-a-half hours of transmission as in Lucknow, stretched to three hours in Calcutta.

When the fifth plan was being formulated it had been proposed by AIR that future TV centres should be three-studio complexes. At current prices in colour such a centre would cost in the neighbourhood of Rs 12 crores. However, with three hours of transmission, which audience will Doordarshan succeed in satisfying? Will there really be

significant line for strict rationing, administered and (at the economically and socially deprived). And what about the so-called urban elite, the vast majority of licence holders?

We know that in the initial phase, there will be few studio-based programmes and a good deal of the production will be out of doors. But one cannot be expected to take this explanation at its face value. If *Prakashan* has been what on the studio side, its resources for outdoor coverage are even poorer. TV news, with its radio bulletin read out on the screen, is a daily reminder of this reality.

This brings us to the price of the TV receiver. The minister for information and broadcasting was recently quoted as having said that a colour TV set would cost Rs 4,500 as against the current cost of Rs 2,000 for a black and white set. But the estimated cost of the colour set is that with a 20-inch screen while the black and white receiver mentioned has a 14-inch screen. Moreover the cost of the colour set excludes customs and excise duties. Perhaps the finance ministry will exempt colour TV sets from excise and customs duty.

According to the minister's statement, villages in future will be provided colour sets. Experience during SITE showed that even the 24-inch screen does not make it possible to have an effective audience of much more than 100 persons. So colour TV sets with a 20-inch screen cannot serve the purpose. Villages will have to be provided receivers with a 14-inch screen. These will cost at least Rs. 6,000, against two thousand rupees for the black and white set now. Is the government likely to sanction the additional money required to provide TV sets in a reasonable number of villages at this price?

Faced

One can only argue on the basis of past records. Since SITE which ended over four years ago (as published), only 40 per cent of the villages have been covered by the terrestrial transmitters and about one thousand receivers have been distributed in the villages. These terrestrial transmitters cover some eight thousand villages which did not fall within the SITE clusters. How many of these villages have been provided with community viewing sets? No definite answer seems to be available, and who will bear the cost of the sets and be responsible for their maintenance? The centre or the states? This question too, has not yet been settled. Indeed, there is no provision for the additional expenditure in the current plan. Incidentally, according to the latest official figures there are less than 9 lakh TV receivers in the country as a whole.

If TV is to become a real force for change, certain facts have to be faced. At least one TV receiver will have to be provided in a reasonable proportion of the six lakh villages of India, and in the larger villages two or three would be needed. There will have to be a proper

other participants in the Indian State research organisations and established during 1976. Otherwise the whole thing will die a natural death as old community listening for radio, reasonable transmission and production facilities will be required. In the sixth plan, the total cost for Doordarshan is Rs 30 crores. It provides for only three new TV centres (Bangalore, Travancore and Ahmedabad) and nine transmitters and three base production centres.

The annual outlay under the plan was Rs six crores in 1979-80 and is just a little higher for 1980-81. In such a financial and operational base Doordarshan is hardly likely to be in a position to play a role in Indian development.

— 100 —

BRIEFS

SATELLITE TO BE LAUNCHED--India's first geostationary experimental communication satellite Apple will soon be airlifted to France by the Indian Space Research Organization Satellite Center, Bangalore. This was disclosed by project director Dr R.N. Vasudan in Bangalore today. He said the satellite will undergo further tests before it is launched from the French Guyanese Space Center early next year. [Text] [BK221034 Delhi Overseas Service in English 0830 GMT 22 Sep 80]

BSASKAR II SATELLITE--Bhaskar II satellite, an improved version of Bhaskar I, is nearing completion. It is expected to be launched in space by the middle of next year. In the light of experience gained from the operation of Bhaskar I satellite, several modifications are being made to overcome operational problems in switching on the TV cameras and also to improve the utilization of the spacecraft within the constraints of time schedule. [Text] [BK200832 Delhi Domestic Service in English 0830 GMT 20 Sep 80]

INFORMATION MINISTER VISITS BELGRADE--Belgrade, 7 Oct (TANJUG)--Indian minister of information Vasant Sathe arrived in Belgrade today at the invitation of the Yugoslav federal government. On arriving, Minister Sathe stated that during his stay in Yugoslavia he will hold talks also on inter-news-agency cooperation within the non-aligned countries' news-agency pool. A protocol on cooperation in the field of information between Yugoslavia and India will be signed during the Indian information minister's visit. [Text] [LD080001 Belgrade TANJUG in English 1945 GMT 7 Oct 80]

NEW MICROWAVE LINE--A two-way microwave "troposcatter" communication link has been established between the Indian Institute of Technology Delhi and the Central Electronics Engineering Research Institute Pilani. It is the first such link in the country meant for research and educational purposes. According to a press statement of the IIT, The Delhi terminal, weighing about three tonnes was airlifted to the top floor of the IIT building by an Indian Air Force helicopter in August last year. [Text] [New Delhi PANTH in English 27 Jul 80 p 7]

BRIEFS

TELEVISION RELAY STATIONS--Four television relay stations will be set up in West Sumatra and are expected to be completed before the 1982 general elections. The relay stations will be set up at (Bukit Tarai) south of Padang, Painan, Siberut Island of the Mentawai Islands group and West Pasaman District. (BK010303 Jakarta Domestic Service in Indonesian 1200 GMT 27 Sep 80)

MINI EARTH STATIONS--The first region telecommunications corporation in North Sumatra and Aceh has targeted the construction of seven mini earth stations in Aceh which will be completed before the general elections in 1982. The mini stations will be constructed in Sinabang, Tapartuan, Heulaboh, (Kotacane), Takeungon and Belangpidie. (BK010303 Jakarta Domestic Service in Indonesian 0700 GMT 30 Sep 80)

CSO: 5500

BRIEFS

TOSHIBA MICROCOMPUTER--Tokyo, 19 Sep (KYODO)--Toshiba Corp has developed what is claimed to be the world's most efficient microcomputer capable of speedily processing more data than conventional types by using large-scale integrations (LSI) based on sapphire instead of silicone. Toshiba has thus become Japan's first firm to apply sapphire substrate LSI in a microcomputer, simplifying LSI's complicated logic circuit. Called silicone on sapphire (SOS), the LSI has an operation speed two or three times faster than the LSI of silicone substrate, which is now used in Japan. Moreover, its integration is some 30 percent better, Toshiba officials said. Officials said that the new microcomputer named 188000 having 16 bits is capable of memorizing about 16 million letters and processing 2.5 million instructions per second. The company plans to use the new device for business and industrial use. The new LSI will be priced at yen 20,000 to yen 60,000 per unit. [Text] [Tokyo KYODO in English 0528 GMT 19 Sep 80 GW]

CSO: 3500

VIEWDATA INFORMATION SYSTEM GIVEN CAUTIOUS APPROVAL

Advisory Council Report

Auckland THE NEW ZEALAND HERALD in English 2 Sep 80 p 5

Report by the HERALD's Wellington Bureau

Text Viewdata, the new electronic information system, has been given cautious, small-scale approval.

But the Government has asked its communications advisory council to prepare a second report before any large viewdata operation is approved.

Two schemes for viewdata systems have already been announced and the council's preliminary report on the subject, which the Government asked for urgently last April, has now been published.

Viewdata is a system where subscribers can call up information on a host of subjects on to their television screens through a special adapter.

Promoted

It operates from central computer storage banks through the telephone system. Subscribers get the information sought by operating a calculator-like keyboard.

The system is being promoted by two companies. One is a consortium of newspaper, computer and electronics firms which includes Wilson and Horton Ltd, publisher of the Herald, and the

other is Fourth Estate Holdings Ltd, which publishes the National Business Review.

Viewdata is already used in Britain, where a system called Prestel is operated by the Post Office. West Germany is planning an advanced Prestel system and other countries are also looking at schemes.

When the Government learnt of the two New Zealand schemes, it asked the communications advisory council — formed in 1977 to advise on long-term telecommunications policy — to make an urgent report on the subject.

This report will be published today and should be on sale at Government Bookshops shortly. The Minister of Broadcasting, Mr Templeton, wants interested parties to read the report and make submissions on it to the council within three months.

Endorsement

In the meantime, Mr Templeton says that any viewdata scheme launched would not be permitted to grow beyond the limited scale recommended by the council

until the second report is finished.

By this, Mr Templeton is giving Government endorsement to the council's recommendations.

The report recommends that a limited viewdata system should begin, but before any major expansion, the council should make a study of the social, business, manufacturing and privacy consequences of viewdata.

In its report, the council states strongly that there should be no monopoly — either state or private enterprise — of viewdata services.

The council says the system should be designed so subscribers can gain access to the central computers of either state or private services, which would mean a standard technology for all operators.

The widest New Zealand manufacturing content should be used from the outset.

Viewdata subscribers would be billed for each "call" made for information through the Post Office billing system, the report says.

Dangers

Noting that unions reacted safely to plans to start Viewdata, the report says: "It is difficult to see that there are real dangers of Viewdata causing significant unemployment" under plans for a small, business-oriented scheme.

The report says there are special dangers in allowing either a state or private

monopoly to emerge in Viewdata.

"To allow one person or organisation to select what will or will not be stored or to select who will or will not be allowed access carries so many obvious dangers the case against monopoly need hardly be argued."

Some form of general privacy legislation might be needed with Viewdata, the

report says, because of the difficulties people or companies might have finding out what information about them is stored on the system.

"The problem may be the more acute because the information is stored in magnetic tape or disc form and proof of automation, or invasion of privacy, may be more difficult to obtain."

Additional Details

Wellington THE EVENING POST in English 2 Sep 80 p 17

Excerpts

The council heard and analysed 45 submissions on this issue. The report, released today, is the result of these and the council's own deliberations.

The report has been released on the recommendation of the council, which felt that there is a need for better public understanding of Viewdata.

The council described Viewdata as a new form of information publishing which has a potential to be developed to become a "powerful means of communication capable of replacing many existing communication services."

It stressed in the report, however, that unrestrained and unco-ordinated development could have a serious adverse impact on the Post Office telecommunications network, and could involve major capital investment by the Post Office.

The report said that while a limited service could be provided without prejudice to longer-term developments and the technology existed for the immediate introduction of a limited scale Viewdata service, there would be a need for standards to be established. A co-ordinated public and

private sector approach would be needed and the connection to the telephone network should be through a Post Office Viewdata access switch.

The Post Office Act 1959 included adequate provision for the administration of a Viewdata service operating over the Post Office telecommunications network, according to the council.

The council does recommend though that Post Office regulations be amended to provide for the setting of conditions for the connection of Viewdata systems and terminals to the telephone network, for the setting of charges, and allowed the Director-General to refuse the connection of equipment that does not comply with an agreed New Zealand standard.

Questions relating to privacy, and the protection of citizens and companies against the storage, retrieval, and sale of information on the Viewdata system which may be damaging or an invasion of privacy, would have to be looked at to see if legislative action was needed, the report said.

The council favoured the Bundespost Viewdata service that is being developed in West Germany.

The report recommends that the council be appointed to undertake further study into Viewdata and report back on the social, business, economic, manufacturing, and privacy consequences of the introduction of Viewdata, taking into account any public comment arising from the publication of this report.

In a statement released with the report the chairman of the Cabinet Committee on Communications (Mr Templeton) commended the council for its caution and its work.

"The enormous potential of this new concept in communications means we must be extremely careful. We must do everything we can to ensure that Viewdata will remain just a superbly efficient method of distributing information."

Mr Templeton said the publication of the report was to stimulate public debate and the report would be sold for \$1.50 by Government bookshops.

He said anyone interested in making submissions should write to the chairman of the council at PO Box 1773, Wellington, within the next three months.

Two Companies Involved

Wellington THE EVENING POST in English 3 Sep 80 p 12

Text7 Two companies planning to introduce Viewdata information systems to New Zealand see the Communications Advisory Council's report on the subject as a go-ahead.

The report, released yesterday, recommends that legal and administrative preparation for the introduction of a Viewdata system should begin at once.

Once these and technical standards are set, the council recommends that a limited Viewdata system be started to satisfy apparent business demand while further in-depth study is carried out into the full impact of an expanded service.

Viewdata is a system in which computer-stored information can be "called up" using an ordinary telephone and displayed on a television receiver.

Two companies planning to introduce such a system here are CBL Holdings Ltd, a group of New Zealand companies, and the Fourth Estate Publishing Company.

Fourth Estate's general manager, Mr Stephen Underwood, said his firm already had a demonstration Viewdata system working and could have a fuller one within two months.

CBL general manager Mr David Page was reluctant to give a definite starting time for his company's system but said it might be by the end of this year. Both companies are aiming initially at the business market.

Mr Underwood said he envisaged the system being used for business information, publishing material, weather services, accommodation and employment guides.

But really the uses are as wide as your imagination," he said.

"In today's world we're bombarded with so much paper. And that's very expensive.

access to an electronic data bank is going to be less expensive and far more useful."

By breaking the ground in this area, the companies would help identify problems and make things easier for the eventual introduction of a public system run by the Post Office, he said.

In Britain, the Post Office is having a two-year test period for its public Viewdata system. Presel

CSO: 5500

LAHORE TO HAVE 6,000-LINE ELECTRONIC EXCHANGE

Islamabad THE MUSLIM in English 29 Sep 80 p 8

(Text)

LAHORE, Sept. 28. The first 6000 line local electronic telephone exchange is ready for commissioning and will go into operation after a go-ahead signal from the Directorate-General Telephones Islamabad. The equipment for this computerized exchange has been imported from Nippon Electric Company Japan. The total cost is estimated at Rs 60 million including a foreign exchange component of Rs 40 million.

After formal commissioning, it would cater the requirements of a large number of people living in the areas including Regal Chowk, Canal Bank, Temple Road, Chowk, Kuriba, Queens Road, Lawrence Road, Race Course Road, etc, Shahra-i-Quaid-i-Azam, Alams Iqbal Road, Zaman Park, Borbawali Chowk, Empress Road, Nicholson Road, McLeod Road, and Chowk Lakshmi.

Reliable sources told The Muslim here today that the demand for 1000 new connections had already been cleared. The demand notices had been issued to 300 persons out of which only 150 had

so far deposited the money required for the installation of telephones.

The exchange has central processor unit which could handle 20,000 lines if need be. Of the 6,000 lines, 1,200 had the provision of push button system while the remaining would function on rotary dial system. For the push button system, the subscriber would have to bear an additional expense of Rs 100. The exchange has also the provision of additional facilities like absentee dialing call for warding call waiting and wake-up service.

It is understood that the subscriber would have to pay Rs 100 plus Rs 10 for each special service. The system of billing would also be changed altogether. Two bills would be sent to the subscriber, one would be for the local calls made during the month and other would be for long distance calls.

This exchange has the services of 11 engineers who have recently returned to Pakistan after undergoing six months training in Japan.

CSO: 5500

PEOPLE'S REPUBLIC OF CHINA

BRIEFS

FUJIAN TELECOMMUNICATIONS--Fuzhou, 2 Oct (XINHUA)--A new integrated circuit telephone exchange that can handle 10,000 telephones has gone into use in Fuzhou, capital of Fujian Province. In Southeast China, this will improve the province's telecommunications facilities. An automatic exchange has been installed in Xiamen, a major coastal city in the province. A long-distance communication symmetric cable carrier wave, which runs from Zhangzhou city, is under construction. The section from Fuzhou has already gone into use. When the project is completed, Fuzhou to Putian, Quanzhou, Xiamen, Zhangzhou and other coastal cities and countries will open long-distance automatic or semi-automatic dialing. [sentence as received] Apart from installing China-made automatic exchanges, Fuzhou plans to import advanced telecommunication equipment. Fujian Province plans to build a microwave circuit that runs from Fuzhou to the southern part of the province and a satellite communication ground station. [Text] [OW051145 Beijing XINHUA in English 0742 GMT 2 Oct 80]

GUANGDONG MILITARY TELECOMMUNICATIONS--From 10 to 16 September, the Guangdong Military District held the first telecommunications competition among militiamen in Guangzhou. Taking part in the competition were 64 male and female militiamen from all parts of the province. The participants have all reached the standard stipulated by the general staff on the military training program for militia. [Guangzhou Guangdong Provincial Service in Mandarin 2345 GMT 16 Sep 80 HK]

CSO: 5500

SOUTH KOREA

BRIEFS

KUMSAN SATELLITE STATION--Seoul, Oct 2 (HAPTONG)--Transmission at the satellite station in Kumsan, South Chungchong Province, is expected to suffer from temporary obstruction between the period October 4-8 due to the Dellinger phenomenon, the Communication Ministry announced today. The phenomenon, which occurs about twice a year, is likely to cause the weakening of tone quality and raise the noise level, the ministry said. The disturbances are expected to occur at the following times: Oct 4, hour 17:04 - 17:06; Oct 5, 17:00 - 17:07; Oct 6, 16:59 - 17:07; Oct 7, 17:00 - 17:07; Oct 8, 17:00 - 17:06. [Text] [SK020259 Seoul HAPTONG in English 0232 GMT 2 Oct 80]

CSO: 5500

SRI LANKA

BRIEFS

DEUTSCHE WELLE AID ACCORD--Under an agreement signed between the Sri Lanka Broadcasting Corporation [SLBC] and Deutsche Welle, the Federal Republic of Germany has set aside a sum of approximately 12,000,000 German marks for the development of radio broadcasting in Sri Lanka. The extensive project will cover the construction of new stations, including 13 new transmitters, in Kantalai, Ambawela, Mahiyangana, Ratnapura and Kirimediakanda and the extension of stations in Jaffna, Mannar, Amparai, Kandy, Maho and Weeraketiya. In addition technical personnel from the SLBC will be sent to Germany for training. [Text] [Colombo SUN in English 17 Sep 80 p 1]

CSO: 5500

TAIWAN

BRIEFS

TELECOMMUNICATIONS DEVELOPMENT--Taipei, 25 Sep (CNA)--The government is planning to invest NT \$306 billion in the next 10 years in telecommunications development, said an official of the Directorate General of Telecommunications of the Ministry of Communications. The official said that the amount is four times higher than the investment amount in telecommunication development in the past 10 years. Of the total amount, NT \$208.9 billion or 68 percent will be used to install more telephone sets in urban areas, NT \$47 billion or 15 percent to modernize telecommunication facilities, and the balance will be used to train more technicians and conduct research projects, the official said. [Text. [Taipei CNA in English 0231 GMT 25 Sep 80 OW]

CSO: 5500

BOLIVIA

BRIEFS

MICROWAVE COMMUNICATIONS LINKS--The national telecommunications company is now connected with the southern microwave system linking Santa Cruz, Chuquisaca, Tarija and Potosi. [La Paz PRESENCIA in Spanish 27 Sep 80 p 4 PY]

CSO: 5500

BRAZIL

BRIEFS

RADIO STATION AUTHORIZED--Radio Cruzeiro of Barra do Bugres has been licensed to operate a radio station on mediumwave for regional purposes in the city of Barra do Bugres, Mato Grosso do Sul State. [Brasilia Domestic Service in Portuguese 2200 GMT 18 Aug 80]

CSO: 5500

NEW BROADCASTING SYSTEM INAUGURATED

PL292020 Bridgetown ADVOCATE-NEWS in English 26 Aug 80 p 3

[Text] Georgetown, Guyana, Monday (CANA)--A four-page supplement on the Guyana Broadcasting Corporation (GBC) has been published here in an obvious effort to bolster the image of the state-owned radio enterprise.

The supplement in the CHRONICLE newspaper details the inauguration of the one-station-two-channel broadcasting system this year, replacing Radio Demerara (now channel 1) and the Guyana Broadcasting Service (now channel 2).

Channel 1 is GBC's "General Service" medium-wave station, placing special emphasis on national, Caribbean and international developments.

Channel 2 serves as the corporation's "regional short-wave" radio, "bringing on the air the voice of the rural dwellers and reflecting more fully the fact that there is a lot of on-going development in the region," according to the supplement.

The new system, restructured to ensure the smooth introduction of television early next year, is also expected to improve radio service to the entire nation, GBC executive chairman Lamber Philadelphia says.

The new system is designed "to produce" through the broadcasting media, programme material which recognises our cultural diversity and advances our national, social, economic and political objectives through information, education and entertainment programming for both the rural and urban areas of Guyana, the CHRONICLE reports.

The two-channel service is the latest development in radio here, when the history of broadcasting goes back nearly 60 years with the establishment in 1926 of the British empire's first radio station.

CSO: 5500

CTI INSTALLED IN NIGER AS PART OF PANAFTEL NETWORK

Nianey SAHEL HEBDO in French 25 Aug 80 pp 20-21

[Article by ASKO: "The International Transit Center

[Text] The means of connecting a country to the world are not only made up of its paved roads, its railroads. There is also its system of mail and telecommunications.

For this reason important projects have been carried out in this framework, and others are under construction, notably the CTI [International Transit Center]. To learn more about this, we met with Mr Abba Mahamane, director of telecommunications.

The installation of a CTI (International Transit Center) network in Niger has been decided on by reason of the development of the PANAFTEL networks. The CTI transmission networks, financed by the Canadian Government, bring together the five countries of the sub-region: Benin, Upper Volta, Senegal, Niger, and Mali. Originally, the system only concerned the transmission arteries, but what people call the CTI's are also those which can transmit automatic communications from one country to the other. It was for this reason that Niger, Benin, and Mali decided on the installation of an international Transit Center.

The CTI not only has the function of interregional transit but also that of automatic, intercontinental transit. It does the same thing for certain domestic communications. The CTI is provided with signalling code--a language which is called R2--which will be used for the central switchboards of Niger, and Code 5 is used by the intercontinental service.

Access to the R2 automatic system to transmit from the interior of Niger to France, for example, is available in the following way: the caller dials a double zero (00) accompanied by the number of the country he is calling. To call at the regional level, to Benin or Senegal, for example, the caller dials one zero (0), followed by a code number, and then the number of the country he is calling.

Originally, it was intended to have 220 circuits, but because of the addition of the network of the northern region, this number has been raised to 323 circuits. The cost of the equipment for this project is 382 million CFA Francs, financed by the Government of Canada. The building will come to 312 million CFA Francs, with a contribution of 1500,000 (not clear whether D or Canadian dollars) by Canada. This building, which will cover 187 m², will also provide space for the Telex Center of Niamey.

Prospects

In the framework of the 3-year plan, the installation of regional work centers was provided for in Zinder, Maradi, Tahoua, and Dosso. Between now and the end of March, 1981, these centers will enter into service. Within the same plan the extension of the centers in Niamey and Maradi is provided for, and the work will be completed in a few months.

In the framework of the 5-year plan the construction of the network of the northern region is provided for. This is a network using a domestic satellite which will connect Agadez and Diffa. It is a project which is well under way and equally will serve the domestic television service. The project as a whole will be completed in 1981, and television will be available, beginning in March, coming from Diffa and Agadez.

In the international context, with the relay station of the northern region, a standard A earth station is planned to strengthen the means of international telecommunications. The PAMAFTEL network which is under construction--the transmission artery connecting Benin to Senegal while passing through the other countries of the sub-region--should, in principle, be completed in March, 1981.

Training of Personnel

The construction of these projects is moving along in synchronization with the training of personnel. Working level personnel are trained at the National Public Works Center. Higher level personnel are trained, either at Rufisque (Multinational School of Postal and Telecommunications Services) in Senegal or at Toulouse, in France. Considerable efforts have been made to train senior level postal and telecommunications personnel. In addition to these long training programs, there is on the job training at the construction sites and on the equipment which the personnel will use after completion of the projects. The requirements for personnel in this area are immense.

Independent of the previously mentioned projects is the Telex Center of Niamey, which is being built and should be practically finished in March, 1981. As of that date communications with the departments of Maradi, Zin-

der, Dosso, Agadez, and Diffa will be handled automatically and, in principle, with no problems. These regional centers will have automatic access to Niamey and with international circuits.

There certainly are problems, Mr Abba Mamadou, director of telecommunications, told us. However, the state will try to resolve them. Our concern, added Mr Abba, is over installing the cables at Niamey and in the major centers of the country. We are doing our best to improve telecommunications in Niger, from the point of view of quality and reliability. Major investments have been made to reach that goal. He concluded that, for the moment, the telecommunications service of Niger, relative to that of the neighboring countries, is in a good position.

9170
CSO: 5500

ETHIOPIA

BRIEFS

TELECOMMUNICATIONS SEMINAR--Addis Ababa (ENA)--A two-day seminar to familiarise the employees of the Telecommunications Service in Addis Ababa and its environs with the mission and functions of COPWE opened at the Ambassador Theatre here yesterday. Speaking at the opening ceremony of the seminar, Comrade Girmaw Engidayehu, Manager of the Telecommunications Service, told the participants to step up their struggle towards the fulfilment of COPWE's mission. He reminded them to work hard to enable the country realise its ongoing National Revolutionary Development Campaign goal. [Text] [Addis Ababa THE ETHIOPLAN HERALD in English 20 Sep 80 p 7]

CSO: 5500

MILITARY RADIO NETWORK CREATES BURGEONING ELECTRONICS INDUSTRY

Windhoek ALGEMEINE ZEITUNG in German 16 Sep 80 pp 1, 3

[Text] The establishment of MARNET (Military Area Radio Network), a radio alert system for farmers in the operational area, has created a market worth millions for the equipment. The same market has likewise given impetus to the start of a national electronics industry. A Windhoek firm has been selling, since early this year, MARNET equipment that meets with Defense and Post Office approval and is almost wholly manufactured in Luederitz Bay.

With nearly 600 interested farmers in the operational area and prices between 1,500 and 2,000 rands for each piece of equipment, the potential market for the MARNET system is estimated to be at least 1.2 million rands. Additional gear and installation costs, as well as interested farmers in the center and south of the country, could bring total demand up to 2 million rands. At present the government is subsidizing purchases in the operational area, with a maximum of R2,000 per farmer.

According to the manager of the "Outspan Radio" firm, the equipment manufactured in Luederitz Bay is 70 percent Namibian in origin, costwise. Parts do come from SA and abroad. They are assembled in Luederitz under the supervision of G. Schlorf. Especially noteworthy in this connection is the fact that certain aspects of the wiring diagram were designed here.

Thompson's Radio Firm has long manufactured small scale specialized equipment in Windhoek. But the MARNET system being sold by this and other firms originates in SA. Thompson says that the Thorcom-IS-gear was designed in SA and is manufactured in Johannesburg. The equipment is 85 percent South African since some components do need to be imported.

"It hasn't been a bed of roses," claimed Outspan Radio's manager in an interview with AZ [ALGEMEINE ZEITUNG]. A complicated licensing system and somewhat uneven coordination among consumers, Post Office and Defense caused manufacturing delays on a number of occasions. Mr Mueller denied that his firm had received active assistance from any department of government.

For those familiar with the local economy the start-up of a small electronics industry is a surprising development. With few exceptions Namibia's economy is limited to the extraction and production of raw materials. Only sporadically is there secondary processing of those raw materials. It is considered encouraging that private initiative is successfully competing with foreign firms in a relatively sophisticated branch of industry such as electronics. Asked by AZ whether such enterprises could become a factor in the economy, an expert replied that such enterprises must performe remain small. A factory tailored for the local market and specializing in products for which there is sufficient local demand could probably make a go of it in Namibia.

A SWA-Agriculture Union (SWALU) circular last year recommended three firms as MARNET suppliers. One of the three firms, Rand Technics (Pty) Ltd., closed shortly after the recommendation. At the time the "Outspan Radio" firm wasn't on SWALU's recommendation list. Meantime the firm has manufactured nearly 125 radios.

Once the MARNET market is saturated, SWA/Namibia's small electronics industry, made possible by the introduction of the MARNET system, could turn to other products and so continue providing local jobs.

CSO: 5500

TWO NEW DIGITAL TELEPHONE SWITCHING SYSTEMS PLANNED

Johannesburg THE CITIZEN in English 25 Sep 80 p 14

[Text]

THE Post Office will next year introduce two of the most modern digital telephone switching systems in the world, the Minister of Posts and Telecommunications, Mr Hennie Smit, said yesterday.

Mr Smit was officially opening a new R200 000 Post Office building at Stilfontein.

The two new exchange systems, the German EWSD and the French E10 (or SA 120) will be introduced in the Johannesburg and Pretoria Areas.

This development would put South Africa ahead of many industrialised countries, the Minister said.

Telecommunications was one of the fastest growing branches of technology in the world, Mr Smit said.

Only seven years ago, all overseas calls were still routed via the undersea cable. Now, with three microwave antennae at Hartbeespoort, satellite transmission of international trunk calls and TV programmes was a reality.

Besides phasing in the fully electronic switching systems with their associated advantages, Mr Smit said, a number of new services were in the offing:

- Pushbutton telephones with built-in memories to facilitate switching procedures.
- Videotex, where the telephone will be connected to a TV set that will enable the user to draw on information from a central data bank. —Sapa.

CSO: 5500

SOUTH AFRICA

'JOHANNESBURG RADIO' ON SOUTH WEST AFRICAN RADIO DEVELOPMENTS

LD021552 Johannesburg Domestic Service in English 1125 GMT 30 Sep

[Excerpts] The SWABC's two shortwave transmitters near Windhoek are to come into operation at six o'clock tomorrow morning, [0400 GMT].

The service will give blanket coverage and will be aimed specifically at listeners outside the FM reception areas. The single channel available will therefore be shared by the English, Afrikaans, German, Herero and Damara-Nama languages. Most of the programs on shortwave will be relayed from the FM channel and shortwave listeners are requested to tell people of other language groups about the new service.

Shortwave transmissions will be carried in the 60 and 90 meter bands in the mornings and evening and in the 31 and 41 meter bands during the day.

The news bulletins broadcast on shortwave from Johannesburg for South West Africans end tomorrow. The SABC's shortwave service from Johannesburg will carry a Transvaal regional bulletin. There will also be an increase in local program content in English, German and Afrikaans from tomorrow, including a 10-minute news bulletin for German speakers at 7.30 in the evening [1730 GMT] on FM and shortwave.

Besides commercial spots to be carried on the SWABC's program services from tomorrow the all-night service goes on the air for the first time at midnight tomorrow until six in the morning [2200-0400 GMT]. This will consist mainly of music with announcements in English, Afrikaans and German and will be broadcast by all the FM and shortwave transmitters except on FM in Kavango.

With the introduction of the new service the SWABC will be on the air for 24 hours a day on all transmitters except those in Kavango.

The transmission of Springbok Radio programs on South West Africa's FM channel ends at six o'clock tomorrow morning [0400 GMT]. Springbok Radio has not been carried on shortwave by the SABC for some time.

CSO: 5500

SWAZILAND

SATELLITE EARTH STATION POSSIBLE IN 2 YEARS

Mbabane THE TIMES OF SWAZILAND in English 16 Sep 80 p 1

[Text]

SWAZILAND may have a Satellite Earth Station, probably within the next two years, according to the Director in the Department of Posts and Telecommunications, Mr John Sikhosana.

Addressing a seminar organised by the Royal Swaziland Society of Science and Technology at the Swaziland College of Technology at the weekend, Mr. Sikhosana also disclosed that recently his department embarked on a radio project whereby isolated rural subscribers who live far from exchanges will be provided with a radio telephone terminal connected to the nearest automatic exchange.

Mr Sikhosana told the seminar that a feasibility study for a Satellite Earth Station has been made and that it was hoped that this project can be implemented within the next two years.

The opening of such a station for international communications services such as telephone, telex, television and data, will provide Swaziland with an exclusive link with the Intelsat Space Communications Network that encircles the world.

However, he pointed out such targets cannot be met without the contribution of technical and other skilled personnel.

He acknowledged that there was general shortage

of science and engineering graduates in Swaziland and that the telecommunications branch of his department was feeling the consequences as far as professionally qualified engineering staff was concerned.

Equally, Mr Sikhosana, said among the senior technical staff there is a shortage of local staff.

Fortunately, the department has a range of telecommunications training programmes both within Swaziland as well as at regional training centres in Malawi and Kenya" said Mr Sikhosana.

Swaziland, like any developing country, he said, required efficient telecommunications for its nation-building development. Government he said, had made a firm commitment to modernise and expand the telecommunications network eight years ago.

"Today we are in the midst of an accelerated programme of expansion," he said. A reliable and high capacity microwave radio trunk network, he said, was now linking Mbabane with Manzini, Shiselweni, Nhlangano and South Africa.

Further expansion of the network, Mr. Sikhosana said was in progress and that links to Pongola Post, Mbabane, Big Bend and Maseru will have been installed before 1983.

CSO: 5500

ZIMBABWE

BRIEFS

'IANA' TO BE DISBANDED--The Inter-African News Agency (IANA) is to be disbanded and replaced by the Zimbabwe News Agency, the Minister of Information and Tourism, Mr Nathan Shamuyarira, has told The Gazette. Mr Shamuyarira said that IANA, a co-operative agency which has served local news organisations for several years, would be used as the "core" for the new press agency. A number of young Zimbabweans are at the moment being trained at press agencies overseas. France is training some Zimbabweans at the Agence France Presse headquarters in Paris, as is the British-based Reuters agency in London. "We are negotiating with Associated Press (a large American press agency), and a news agency in Budapest has offered us two scholarships," said Mr Shamuyarira. "We will train our people all over the world, but when they come back they will be completely independent and work for Zimbabwe." [Text] [Salisbury THE FINANCIAL GAZETTE in English 19 Sep 80 p 1]

CSO: 5500

USSR

USSR LAUNCHES COMMUNICATIONS SATELLITE

LD061252 Moscow TASS in English 1240 GMT 6 Oct 80

[Text] Moscow, 6 Oct (TASS)--Under a program of developing communication systems and television broadcasting through artificial earth satellites, the USSR launched a communication satellite "Raduga" on October 1. Its onboard retransmission equipment is intended for uninterrupted round-the-clock radio, telephone and telegraph communication in the centimetre wave range and simultaneous beaming of colour and black-and-white national television programs to the "Orbita" network of stations.

The satellite's circular orbit is close to stationary and has the following parameters: distance from terrestrial surface--36,000 km, period of round-the-earth revolution--24 hours 4 minutes, orbit inclination--0.4 degrees.

Apart from modernized multibarreled communication and TV equipment, the satellite has a three-axis system of accurate orientation to earth, a power system with independent guidance and sun-tracking solar batteries, an orbit correcting system, a thermoregulation system, a radiotelemetric system to relay data on the function of onboard equipment, and a radio system of high-precision orbit measurement and satellite control.

The onboard equipment is functioning normally. The satellite is controlled by a checkout complex. The "Raduga" satellite has the international registration index "Statsionar-3."

CSO: 5500

FIVE-YEAR PLAN FOR EUROPEAN MICROELECTRONICS DEVELOPMENT PROPOSED

Paris LE MONDE in French 19 Jul 80 pp 25-26

[Article by Philippe Lemaitre]

[Text] The European Commission has just addressed proposals to the member governments on actions to be taken at Community level in respect to microelectronics and telecommunications.

These two documents are responses to the Dublin European Council directives of November 1979. At that time the governments heads of the Nine asked the Community agencies to define a general strategy in the fabulous field of information technology.

Brussels (European Communities)--"The strategy we are now proposing to the governments is a catch-up strategy," stated on Thursday 17 July M. Davignon, the Commissioner for Industrial Policy, in his presentation to the press of the proposals on microelectronics. "At this time the community imports 65 percent of the integrated circuits (IC's) which it needs, and is even more dependent in the case of the most advanced numerical IC's. In terms of economic balance a deficit of 270 million ECU's (1.6 billion francs) was the result in 1979, which is not negligible, but is not the most serious thing. The spectacular drop in component cost means that some power of intelligent calculation can be incorporated into practically all industrial products. Therefore, the backwardness of the European technology in comparison to the United States and Japan is a threat to the competitiveness of the growing Community industry sectors.

The Nine are aware of the risk and in 1979 advocated "new cations intended to provide Europe with a modern microelectronics capacity by 1985." In recent years the member states have intensified their national efforts in support of this sector. But, according to the Commission, these programs are "fragmentary." The Community specified that "it is the responsibility of the Community to fill the gaps left by national products and to concentrate its efforts on the development of advanced technologies which may enable the

European industry to keep up with the commercialization of the most advanced products by 1985." Internal disputes with the equipment side of possible better to define the objectives to be pursued for success in this strategic plan. "It must be feasible of commercializing products and using additional resources for components of a size smaller than the EEC's. A broad consensus has been achieved to agree to what priority action is imperative if the specific objectives are to be reached."

In this end, the main proposal of the Commission is intended to promote a European industry of the advanced equipment needed to produce the future generation of computer IC's. "There are now the real technological problems in this of equipment," an expert from Brussels explained to us, expressing again the illustration supplied by the Commission, which, in the case of the mechanical industry, would apply to the microelectronic industry. At this point, the major part of this industry is in the United States. The Commission's document describes the disadvantages arising in Europe from this situation: "In America, and more and more in Japan, the continuous innovation process in the components industry is constantly sustained by dialogue and partnership with the specialized firms which develop and produce the necessary new materials and equipment." Such equipment firms are concentrated, almost nonexistent in the EEC (the Commission lists only 2), and the European IC producers must acquire the knowhow and equipment from the United States "as they become available, i.e., several years after the American industries have had access to them, and sometimes just when a new generation of equipment appears."

To spur the formation of a viable European equipment industry it is necessary to:

1. Encourage a close cooperation between the users, i.e., the IC manufacturers, and the equipment makers;
2. Raise the process to Community level since the eventual profits require marketing prospects extending to the whole EEC; and
3. Encourage only projects which are competitive with the Japanese and American efforts.

Public aid

To reduce the risks which will be incurred by IC users and producers, referring to European equipment enterprises, the Commission proposes that public aid be granted and amount to up to 50 percent of the cost of the prototypes for which orders will thus be placed. But the Commission subjects the grant of these subsidies to an important condition. A grant will be assigned only "when a number of Community firms is pledged to use the prototypes of a given manufacturer and to invest in the necessary technical operations."

To execute this promotional effort the Commission regretfully refrained from suggesting Community financing. "A strategic series of actions of this type could be for some an ideal example of Community budget diversification for industrial development needs." But the "natural resources" of the EEC are being spent. Prompt action must be taken and to this end the Commission prefers to rely on national resources and procedures.

However, to induce transnational cooperation, "the possibility of a financial contribution by the Community is still under consideration in the event that at least 3 member states should participate." How can one be sure that this "equipment plan" will be conducted coherently on the basis of the needs of the whole Community? Aside from the fact that a first series of priority actions has been defined the Commission suggests the creation of a light structure for Community decisions: An Administrative Committee ensuring that subsidies will be granted by the same method by the different national administrations, or determining "the minimum number of user companies pledging to buy a given type of equipment to start the member state support mechanism."

Beside this central proposal concerning the equipment industry the Commission recommends also two kinds of action: The coordination of microelectronics programs and the financing at university level of studies of the new possibilities which now exist" in computer-assisted creative thought and testing."

Telecommunications--The Creation of a Community Market

The second proposal relates to telecommunications. A revolution is in progress in this field. This revolution is of dual nature: (1) The emergence of new communication networks using modern transmission technologies (glass fibers, satellites) combined with numerical transmission; and (2) The initiation for customers, i.e. substantially the enterprises, of a whole spectrum of new voice and videophone services: transmission of coded data, text processing equipment, and teleconference calls.

The Commission stresses that it is essential that the European industry as a producer of materials, and especially as a user, should benefit from the tremendous telecommunication boom. The national administrations, which in Europe enjoy a monopoly, are aware of it. They have already agreed that "the new integrated numerical service networks"--which will permit more rapid, more reliable, and less costly transmission--must be conceived and installed at European level, and know that a simple interconnection of networks as is in effect in the present telephone networks is not sufficient. The Commission suggests going must farther and taking advantage of the opportunity to decide that the new services which will be created on the basis of these modern networks will also be defined coherently to provide for unhindered transnational use.

The second proposal, which complements the first, is clearly involved with industry. The backing of the member governments must be obtained to create a Community market for automatic data transmission terminals. This is a considerable potential market extending from computers to television sets designed for data processing and connected to the network. In respect to more conventional equipment (standard telephones, private automatic switchboards, teleprinters) the Commission also recommends to the Council the progressive opening of public telecommunication markets.

9496
CSO: 5500

FRANCE

BRIEFS

FIBER OPTICS TELEPHONE CABLE--The first French connection using optical fiber cables between telephone exchanges has just been installed by LTT. It was placed in service in Paris at the end of August 1980. This connection was put in for the Directorate-General of telecommunications as part of a contract awarded jointly to LTT and other units and subsidiaries of Thomson-CSF. It uses a cable which, with an outside diameter of 21 mm, can carry more than 30,000 telephone channels on a luminous support emitted by laser. This cable connects the two Paris exchanges of "Tuilleries" and "Philippe-August" which are 7 km apart. [Text] [Paris ELECTRONIQUE ACTUALITES in French 12 Sep 80 p 1] 5058

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October 29, 1980

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